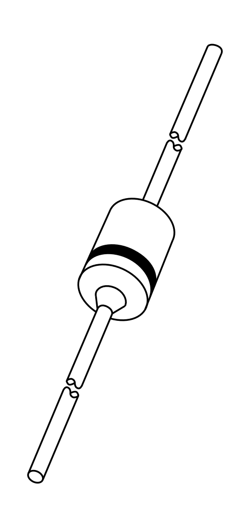
DATA SHEET



1N5817; 1N5818; 1N5819
Schottky barrier diodes

Product specification
Supersedes data of April 1992
File under Discrete Semiconductors, SC01

1996 May 03

Philips
Semiconductors





Schottky barrier diodes 1N5817; 1N5818; 1N5819

FEATURES

- Low switching losses
- Fast recovery time
- Guard ring protected
- Hermetically sealed leaded glass package.

APPLICATIONS

- Low power, switched-mode power supplies
- Rectifying
- Polarity protection.

DESCRIPTION

The 1N5817 to 1N5819 types are Schottky barrier diodes fabricated in planar technology, and encapsulated in SOD81 hermetically sealed glass packages incorporating Implotec™(1) technology.

(1) Implotec is a trademark of Philips.

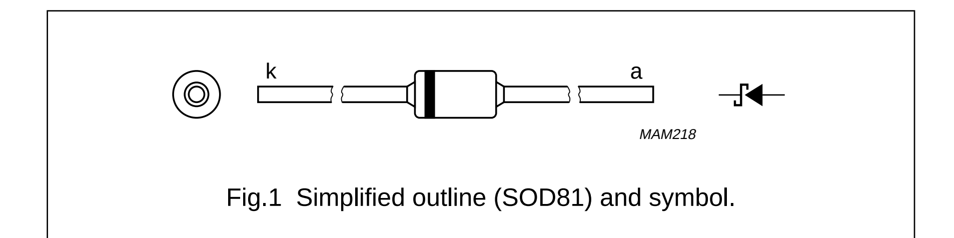


Fig.1 Simplified outline (SOD81) and symbol.

LIMITING VALUES

In accordance with the Absolute Maximum Rating System (IEC 134).

SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
V_R	continuous reverse voltage				
	1N5817		–	20	V
	1N5818		–	30	V
	1N5819		–	40	V
V_{RSM}	non-repetitive peak reverse voltage				
	1N5817		–	24	V
	1N5818		–	36	V
	1N5819		–	48	V
V_{RRM}	repetitive peak reverse voltage				
	1N5817		–	20	V
	1N5818		–	30	V
	1N5819		–	40	V
V_{RWM}	crest working reverse voltage				
	1N5817		–	20	V
	1N5818		–	30	V
	1N5819		–	40	V
$I_{F(AV)}$	average forward current	T_{amb} = 55 °C; $R_{th\ j\text{-}a}$ = 100 K/W; note 1; $V_{R(equiv)}$ = 0.2 V; note 2	–	1	A
I_{FSM}	non-repetitive peak forward current	t = 8.3 ms half sine wave; JEDEC method; $T_j = T_{j\ max}$ prior to surge: $V_R = 0$	–	25	A
T_{stg}	storage temperature		–65	+175	°C
T_j	junction temperature		–	125	°C

Notes

1. Refer to SOD81 standard mounting conditions.
2. For Schottky barrier diodes thermal run-away has to be considered, as in some applications, the reverse power losses P_R are a significant part of the total power losses. Nomograms for determination of the reverse power losses P_R and $I_{F(AV)}$ rating will be available on request.

ELECTRICAL CHARACTERISTICS

T_{amb} = 25 °C; unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
V_F	forward voltage	see Fig.2				
	1N5817	I_F = 0.1 A	–	–	320	mV
		I_F = 1 A	–	–	450	mV
		I_F = 3 A	–	–	750	mV
V_F	forward voltage	see Fig.2				
	1N5818	I_F = 0.1 A	–	–	330	mV
		I_F = 1 A	–	–	550	mV
		I_F = 3 A	–	–	875	mV
V_F	forward voltage	see Fig.2				
	1N5819	I_F = 0.1 A	–	–	340	mV
		I_F = 1 A	–	–	600	mV
		I_F = 3 A	–	–	900	mV
I_R	reverse current	$V_R = V_{RRMmax}$; note 1	–	–	1	mA
		$V_R = V_{RRMmax}$; T_j = 100 °C	–	–	10	mA
C_d	diode capacitance	V_R = 4 V; f = 1 MHz				
	1N5817		–	80	–	pF
	1N5818		–	50	–	pF
	1N5819		–	50	–	pF

Note

1. Pulsed test: t_p = 300 µs; δ = 0.02.

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
$R_{th\ j-a}$	thermal resistance from junction to ambient	note 1	100	K/W

Note

1. Refer to SOD81 standard mounting conditions.

GRAPHICAL DATA

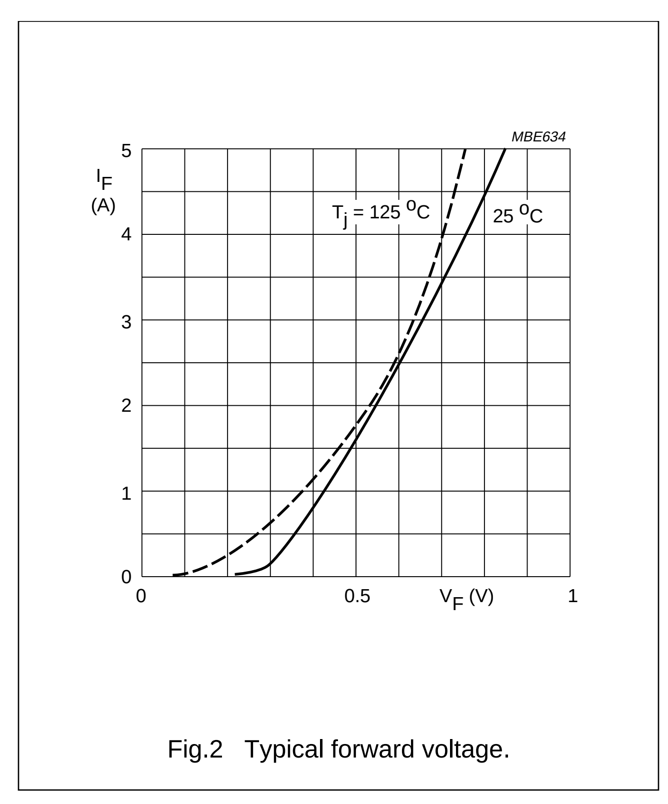


Fig.2 Typical forward voltage.

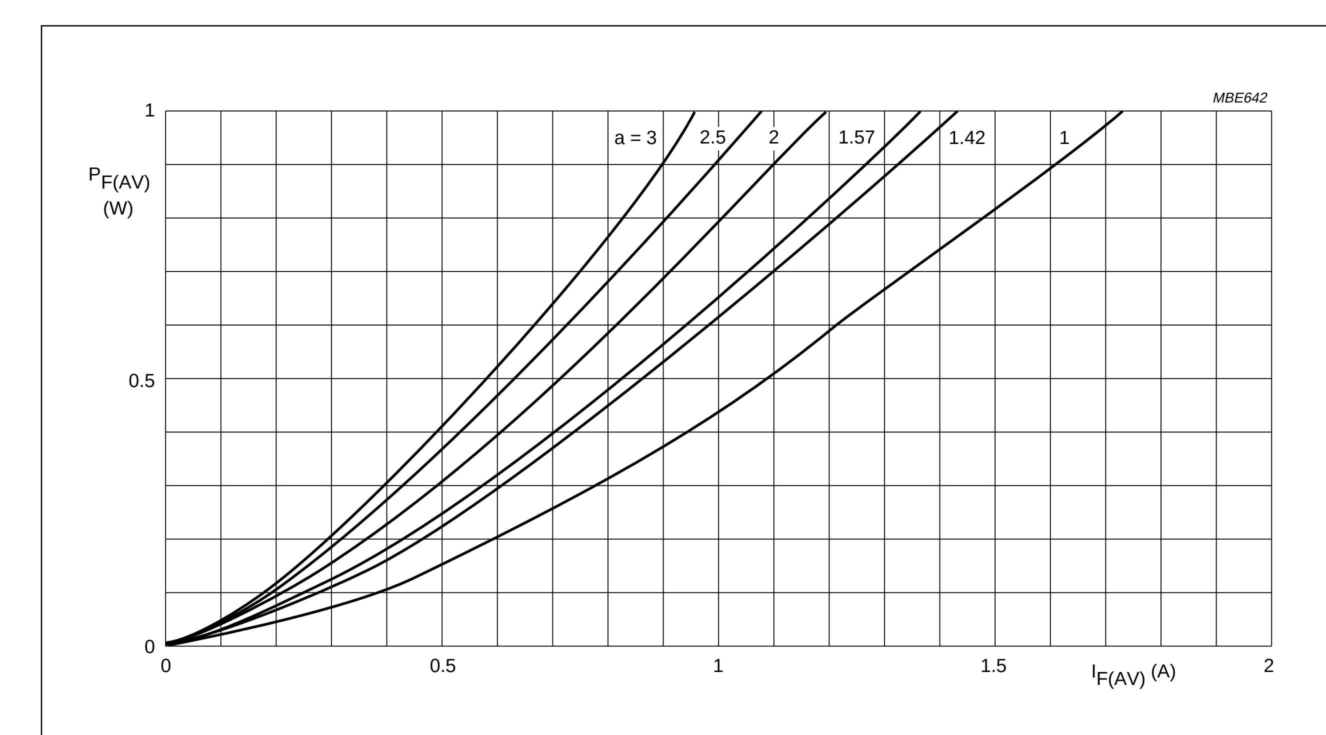


Fig.3 1N817. Maximum values steady state forward power dissipation as a function of the average forward current; $a = I_{F(RMS)}/I_{F(AV)}$.

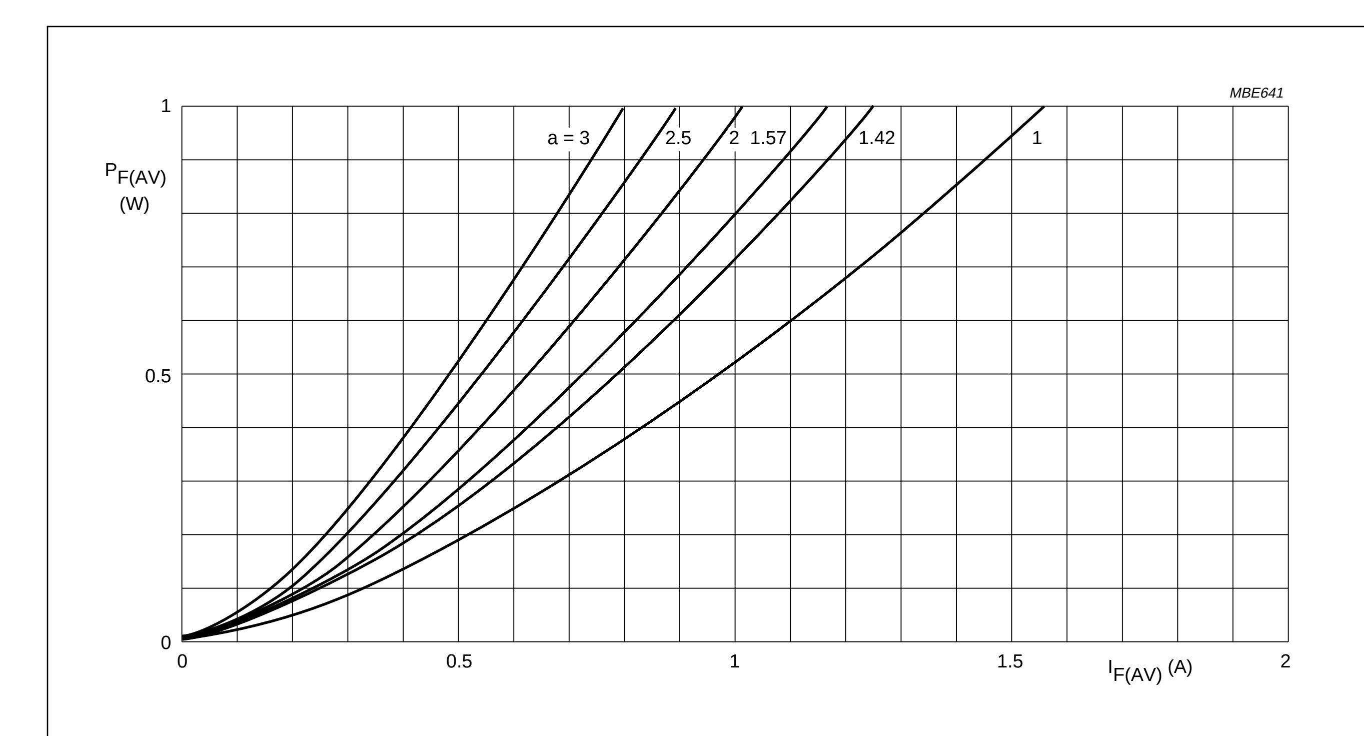


Fig.4 1N5818. Maximum values steady state forward power dissipation as a function of the average forward current; $a = I_{F(RMS)}/I_{F(AV)}$.

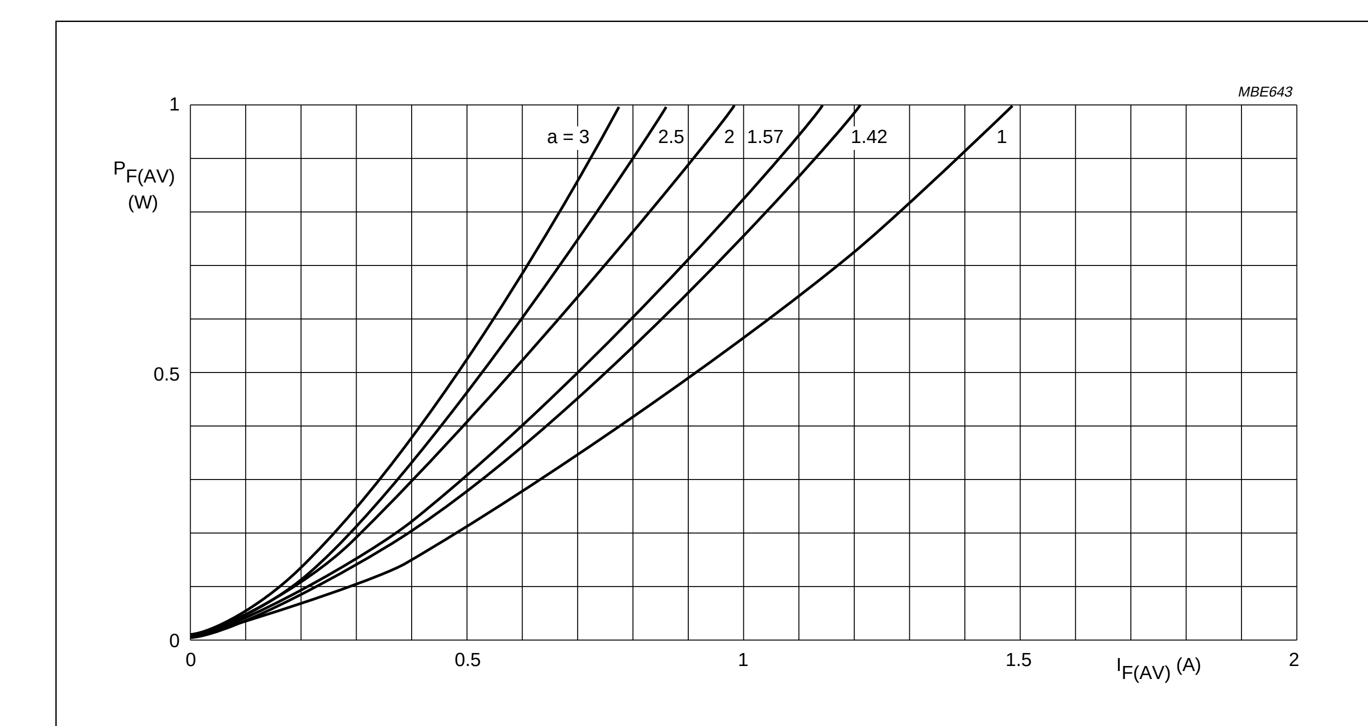


Fig.5 1N5819. Maximum values steady state forward power dissipation as a function of the average forward current; $a = I_{F(RMS)}/I_{F(AV)}$.

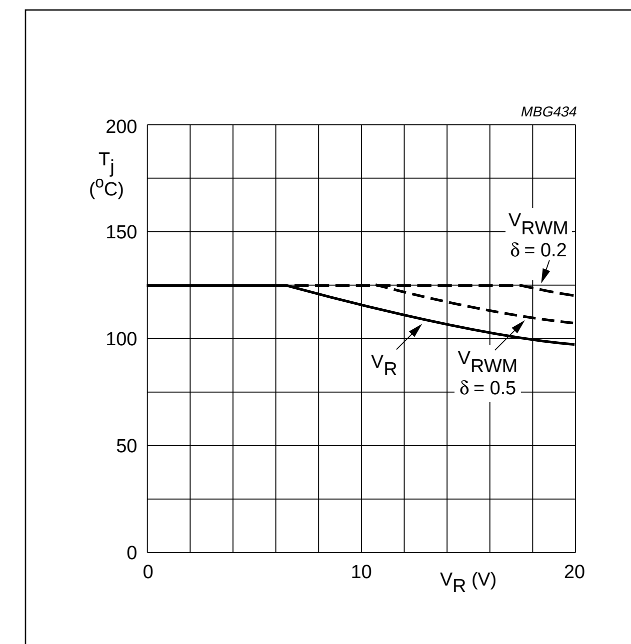


Fig.6 1N5817. Maximum permissible junction temperature as a function of reverse voltage; $R_{th\ j\text{-}a}$ = 100 K/W.

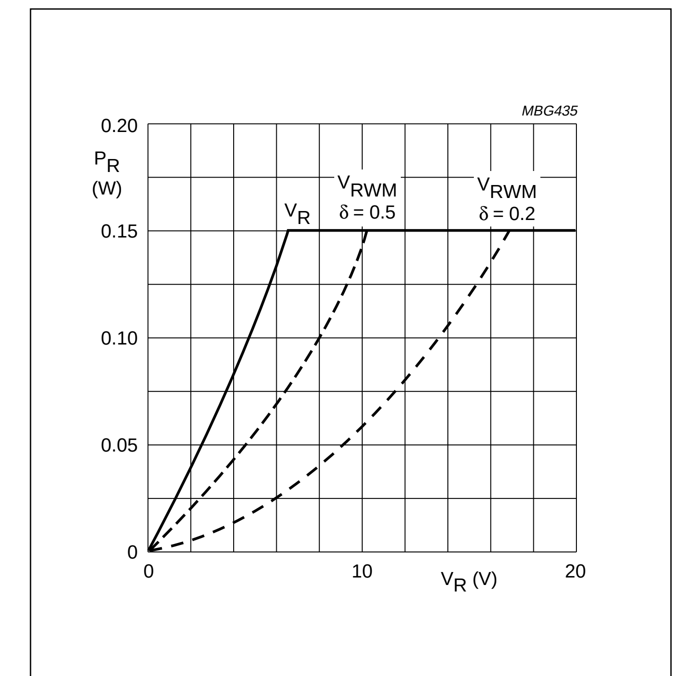


Fig.7 1N5817. Reverse power dissipation as a function of reverse voltage (max. values); $R_{th\ j\text{-}a}$ = 100 K/W.

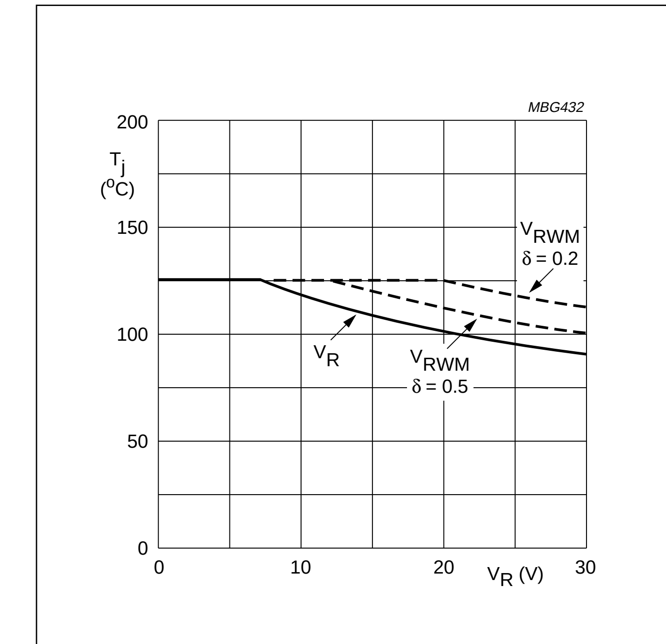


Fig.8 1N5818. Maximum permissible junction temperature as a function of reverse voltage; $R_{th\ j\text{-}a}$ = 100 K/W.

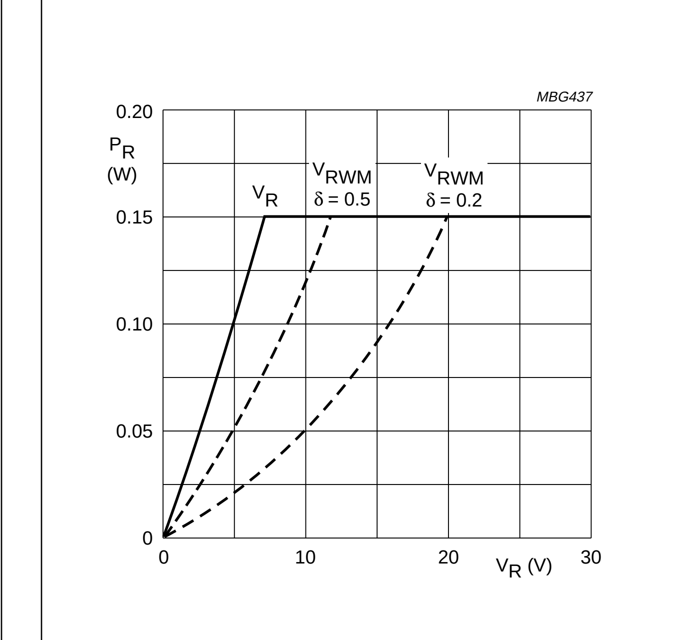


Fig.9 1N5818. Reverse power dissipation as a function of reverse voltage (max. values); $R_{th\ j\text{-}a}$ = 100 K/W.

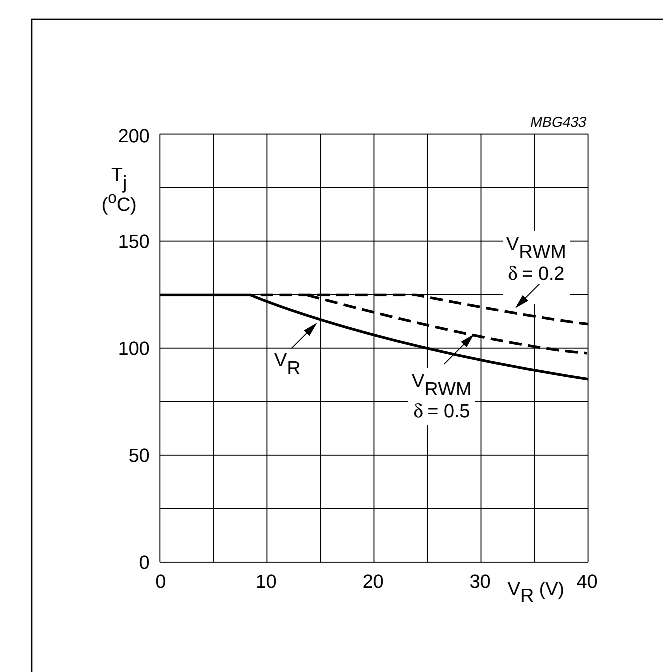


Fig.10 1N5819. Maximum permissible junction temperature as a function of reverse voltage; $R_{th\ j\text{-}a}$ = 100 K/W.

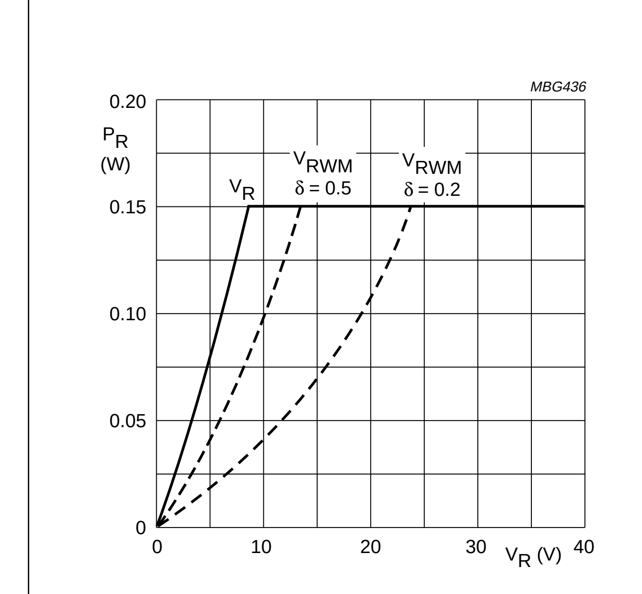


Fig.11 1N5819. Reverse power dissipation as a function of reverse voltage (max. values); $R_{th\ j\text{-}a}$ = 100 K/W.

PACKAGE OUTLINE

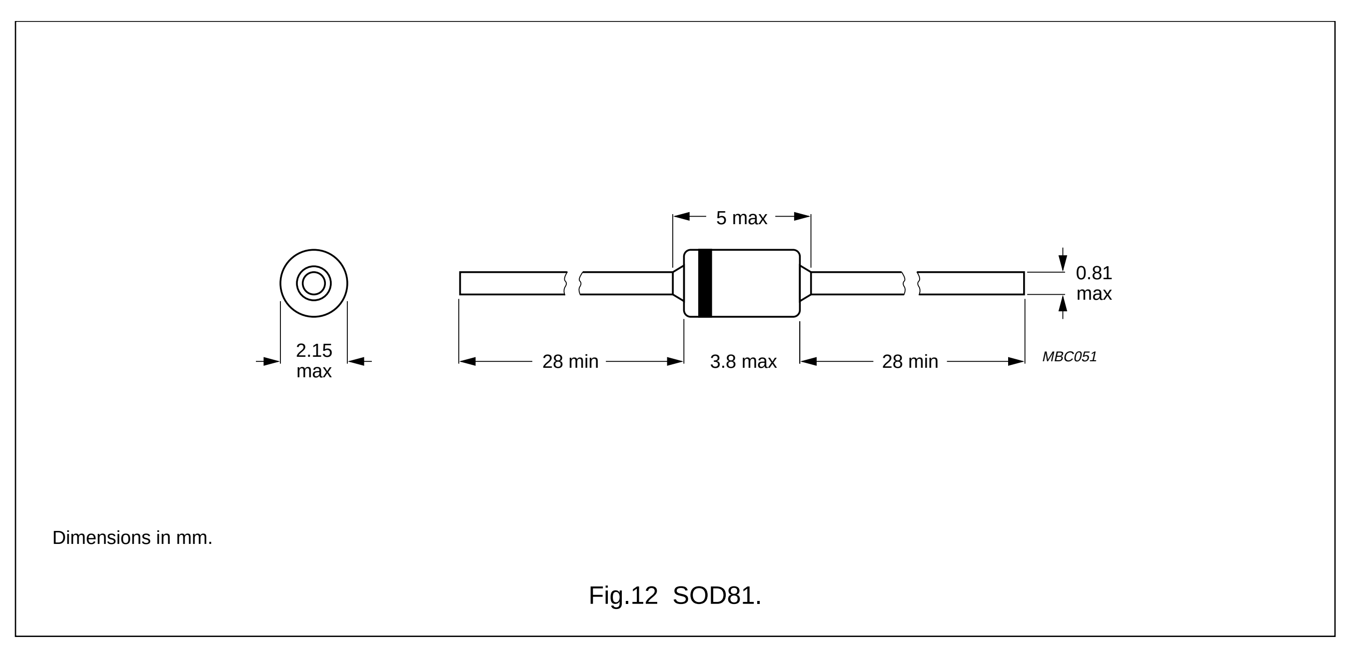


Fig.12 SOD81.

DEFINITIONS

Data sheet status	
Objective specification	This data sheet contains target or goal specifications for product development.
Preliminary specification	This data sheet contains preliminary data; supplementary data may be published later.
Product specification	This data sheet contains final product specifications.
Limiting values	
Limiting values given are in accordance with the Absolute Maximum Rating System (IEC 134). Stress above one or more of the limiting values may cause permanent damage to the device. These are stress ratings only and operation of the device at these or at any other conditions above those given in the Characteristics sections of the specification is not implied. Exposure to limiting values for extended periods may affect device reliability.	
Application information	
Where application information is given, it is advisory and does not form part of the specification.	

LIFE SUPPORT APPLICATIONS

These products are not designed for use in life support appliances, devices, or systems where malfunction of these products can reasonably be expected to result in personal injury. Philips customers using or selling these products for use in such applications do so at their own risk and agree to fully indemnify Philips for any damages resulting from such improper use or sale.